Correspondence

Another aide-mémoire

DEAR SIR,

When playing once with an electronic calculator I discovered that

$$10(e^{\pi} - \pi^{e}) - 2\pi = \frac{e}{5} - 10\left(\frac{\pi}{e} - 1\right)\sin(\pi - e)^{0} = \cdot 5322,$$

rounding to 4 decimal places.

I am prompted to bring this to your notice by Professor Goodstein's article regarding the numeric interest of the Association's new address in the March *Gazette*. 2235 are, of course, the first four non-zero digits of the Editor's telephone number. I find this a useful way (nay, two) of remembering it. . . .

Yours faithfully,

STEPHEN CASTELL

107 Spital Road, Maldon, Essex

Reviews

Regular complex polytopes, by H. S. M. Coxeter. Pp x, 185. £9·80. 1975. SBN 0 521 20125 X (Cambridge University Press)

This is an astonishing book—the ideal present for a mathematician who enjoys patterns, whether geometric or algebraic, and who is sometimes depressed by the arid axiomatic theories of so much published mathematics. If you have a friend in this category then there are two good reasons why you should buy this book on his behalf.

The first is that he will not buy it himself. Even if he is lucky enough to see it he will be deterred by the price and by the unfamiliarity of the notation. He will be attracted by the sumptuous full-page diagrams of beautiful patterns with names like the great grand stellated 120-cell but will be uncertain what they represent. He will resist the temptation to purchase by arguing that complex polytopes are hardly a central topic in mathematics, that he does not need the book for his teaching or for his research, and that the book appears to consist mainly of examples with no clear development of general theory.

The second reason is simply that on all these counts he will have been quite wrong. As to the price, for example, the dozen largest and most beautiful diagrams could easily be sold singly in art shops: there are indeed analogies between this book and much more expensive sets of art reproductions or of symphonic recordings. The author writes in an unusually compact style and has selected his material with such skill that he is able to compress into one book what could have been five distinct monographs: (1) a masterly 28-page survey of two- and three-dimensional symmetries; (2) a 25-page section which explains polytopes in four-dimensional space and introduces the author's technique of studying their spherical trigonometry by means of frieze patterns; (3) an 18-page exposition of quaternions including the classification and geometric significance of subgroups; (4) a 20-page study of n-dimensional unitary space with a complete enumeration of finite reflection groups when $n = 2$; (5) the promised detailed treatment of complex polygons, complex polytopes and complex honeycombs, culminating in a complete classification of the various symmetry groups, within 50 pages. As in the real case, the number drops sharply in higher dimensions and thus justifies the concentration on low-dimensional examples.

This conciseness of exposition has not been achieved by concentrating on general